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To Study the Levels of Serum Resistin in Prediabetics and Newly Diagnosed Type 2 Diabetics

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ABSTRACT

The aim of the study was to measure serum levels of Resistin in impaired glucose tolerance (IGT) and newly diagnosed type 2 diabetics (NDT2D) and compare with healthy control subjects. In this study 61 IGT, 61 NDT2D and 61 healthy subjects (age and gender matched) were enrolled. Insulin and Resistin were assessed. Serum Resistin levels were higher in IGT and NDT2D subjects compared with healthy controls (9.16±3.06ng/ml, 14.5±5.31ng/ml vs 5.11±1.56ng/ml, respectively, $p<0.0001$). Increased serum Resistin levels in IGT and NDT2D over healthy subjects.

Keyword: Resistin, IGT, NDT2D

1.INTRODUCTION

Prediabetes is an intermediate state of hyperglycemia with glycemic parameters above normal but below the diabetes threshold. It usually does not cause symptoms but people with prediabetes often have obesity (especially abdominal or visceral obesity), dyslipidemia with high triglycerides and/or low HDL cholesterol, and hypertension.

Type 2 DM (T2DM) is characterized by insulin insensitivity as a result of insulin resistance, declining insulin production, and eventual pancreatic beta-cell failure. This leads to a decrease in glucose transport into the liver, muscle cells, and fat cells. There is an increase in the breakdown of fat with hyperglycemia. It is difficult to diagnose early, as it is mostly asymptomatic and usually presents with complications like nephropathy, cardiovascular disease, retinopathy, neuropathy, cerebrovascular disease and peripheral vascular disease.

Resistin is a member of a secretory protein family, known as resistin-like molecules (RELMs). It was originally named for its resistance to insulin. Although, initially, resistin was found to be adipose-specific in rodents, it was later shown that, in humans. Resistin was correlated with diabetes-linked risk factors, obesity and insulin resistance. Serum resistin was higher in diabetic than in healthy subjects. [Naglaa Azab et al. (2012) . İrem Bilgetekin et al. (2019) Rowyda N.Al-Harithy et al. (2005)] Resistin is probably not directly involved in the beta cell dysfunction that causes Type 2 diabetes **[**K. N. Conneely et al. (2005)]

Although there are many evidence linking serum Resistin concentration in IGT and NDT2D limited. Therefore, present study was undertaken to evaluate serum Resistin

levels in patient with IGT and NDT2D, and to compare it with healthy controls.

2. MATERIALS AND METHOD

The present study has been conducted on 61 diagnosed IGT and 61 NDT2D patients attending Department of General Medicine, J.L.N. Medical College, Ajmer. 61 healthy subjects of similar age group and BMI have been included in the study as control group. Anthropometric parameter and other variables i.e. Age, weight, Height, Body mass index (BMI), Serum Resistin, HBA1C, Fasting Serum Glucose, Serum Insulin were Measured.

Venous fasting, post-prandial blood sample was collected by aseptic technique and sample collected in both plain vial and EDTA vial. 2 ml Potassium-EDTA blood sample was collected for estimation of HbA_1C. Samples were processed for serum Glucose and Remaining samples were separated into labeled tubes and kept freezed until assayed.

3. RESULTS AND OBSERVATION

In this study, 61 cases of IGT and 61 NDT2D were compared with 61 healthy controls.

Table 1: Anthropometric parameters of IGT, NDT2D subjects and Healthy subjects (controls)

Parameters	IGT subjects Mean ±SD	NDT2D Subject Mean ± SD	Healthy Subjects Mean ±SD
AGE (Years)	41.44± 4.43	40.94 ±4.60	40.94±5.60
WEIGHT (Kg)	82.56±15.42	81.00±8.21	68.75±7.66
HEIGHT (cm)	166 ± 8.29	167±7.59	169 ± 6.62
BMI (Kg/m^2)	30.07±6.45	29.26±2.86	24.09±2.41

Table 2: Biochemical parameters of IGT subjects, NDT2D subjects and Healthy subjects (controls)

Parameters	IGT cases (Mean ±SD)	NDT2D Cases (Mean ±SD)	Healthy Control (Mean ±SD)	P- Value
Resistin (ng/ml)	9.16± 3.06	14.5 ±5.31	5.11± 1.56	<0.0001(HS)
HBA1C%	6.3 ±0.9	7.8 ±1.4	5.3± 0.6	<0.0001(HS)
Serum Glucose (mg/dl)	117.2 ±5.1	176.9± 37.6	87.6± 12.2	<0.0001(HS)
Serum Insulin (µU/ml)	12.3± 8.8	17.2± 11.8	10.5± 8.4	<0.0001(HS)

P Value <0.0001 is considered highly significant.

Basic anthropometric parameters of IGT, NDT2D subjects and healthy subjects are summarized in table -1. There was no significant difference between IGT, NDT2D and healthy subjects regarding mean age (41.44±4.43,40.94±4.60 vs 40.94±5.60yrs). BMI mean ±SD in kg/m^2 in IGT, NDT2D and healthy subjects was (30.07±6.45, 29.26±2.86 vs 24.09±2.41) and it was highly significant. Biochemical parameter of IGT, NDT2D and healthy subjects are presented in table-2. IGT, NDT2D subjects had higher Resistin levels compared to healthy subjects (9.16±3.06, 14.5±5.31 vs 5.1±1.56, P<0.0001).

4. DISCUSSION

In the present study, IGT and NDT2D subjects have significantly higher levels of Resistin as compared to healthy control subjects. Our result was consistent with previous research which claimed the tendency of increase of Resistin levels in IGT and NDT2D. Onalan et al. previously found Serum resistin level, which is one of the main parameters of our study, increased significantly in the T2DM group. Erhan Onalan et al. (2020)Serum resistin levels were significantly higher in the T2DM (14.5 ± 5.31 ng/mL) and IGT group (9.16 ± 3.06 ng/mL) compared to the control group (5.11 ± 1.56 ng/mL). Several studies have reported that serum Resistin levels were significantly higher in the T2DM and IGT group compared to the control group. Result of this study suggests that serum levels of Resistin are increased in patient with IGT and NDT2D.

Limitations of Study

Our sample size was relatively small.

6. CONCLUSION

From the present study it is concluded that serum Resistin levels gets increase prior to onset of Diabetes. Moreover, the relation between the Resistin and metabolic changes may act as a major player in the link between the metabolic syndrome and Diabetes. It could be considered among therapeutic agents used in the prevention of diabetes and in the prevention or reduction of its critical complications.

Declaration by Authors

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REFERENCES

1. Bansal N. Prediabetes diagnosis and treatment: A review. World J Diabetes 2015; 6(2): 296-303.
2. "Classification and Diagnosis of Diabetes": Diabetes Care. 2017 January; 40 (Suppl 1): S11–S24.
3. Fujioka K: Pathophysiology of type 2 diabetes and the role of incretin hormones and beta-cell dysfunction. JAAPA.2007; suppl 3-8.
4. Roche MM, Wang PP: Factors associated with a diabetes diagnosis and late diabetes diagnosis for males and females. *J Clin Transl Endocrinol*.2014; 3 (1):77–84.
5. Steppan CM, Bailey ST, Bhat S, Brown EJ, Banerjee RR: The hormone resistin links obesity to diabetes. *Nature*.2001;409(6818): 307-312.
6. Rowyda N. Al-Harithy, Shareefa Al-Ghamdi: Serum resistin, adiposity and insulin resistance in Saudi women with type 2 diabetes mellitus. Ann Saudi Med. 2005;25(4):283-287.
7. K. N. Conneely, K. Silander, L. J. Scott, K. L. Mohlke, K. N. Lazaridis, T. T. Valle, J. Tuomilehto, R. N. Bergman, R. M. Watanabe, T. A. Buchanan, F. S. Collins, and M. Boehnke: Variation in the resistin gene.
8. Erhan Onalan, Burkay Yakar, Abdullah Onder Barım, Mehmet Ferit Gursu: Serum apelin and resistin levels in patients with impaired fasting glucose, impaired glucose tolerance, type 2 diabetes, and metabolic syndrome. Endokrynol Pol. 2020; 71 (4): 319–32.

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